

Amendments to the Claims

Claim 1 (previously presented). An LED array assembly, comprising in combination:

- a) a woven grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid defining interstices between the conductors, open in directions through the grid, sized and distributed over the grid to enable viewing through the grid, ~~configured~~ for passing coolant fluid into close heat transfer relation with the grid and diodes, for transfer of heat to the fluid from the grid and from the diodes.

Claim 2 (original). The combination of claim 1 wherein the electrical conductors comprise insulated metal wires that act as electrical and thermal conductors and that also serve as structural load conductors, for arrays of such diodes.

Claim 3 (previously presented). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid configured for passing coolant fluid for transfer of heat to the fluid,
- d) and wherein said electrical conductors comprise insulated metal wires that act as electrical and thermal conductors and that also serve as structural load conductors, for arrays of such diodes,
- e) wherein the wires have dielectric coatings thereon.

Claim 4 (original). The combination of claim 1 wherein the conductors comprise woven wires.

Claim 5 (original). The combination of claim 1 wherein the array has at least one of the following:

- i) curvature
- ii) complex shape

- iii) compliant configuration
- iv) flexibility.

Claim 6 (original). The combination of claim 1 including means to effect and/or guide flow of coolant fluid through or along the array.

Claim 7 (original). The combination of claim 1 wherein the grid is dark to increase viewing contrast with LEDs during their operation.

Claim 8 (original). The combination of claim 1 including one of the following:

- i) a substrate above which LEDs are placed
- ii) a superstrate associated with the array and LEDs to provide structural strength to the assembly.

Claim 9 (previously presented). The combination of claim 1 including a first sheet at one side of the grid and diodes and facing the diodes, to pass light emitted by the diodes.

Claim 10 (previously presented). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid configured for passing coolant fluid for transfer of heat to the fluid,
- d) there being a first sheet at one side of the grid and diodes and facing the diodes, to pass light emitted by the diodes,
- e) and including a second sheet at the opposite side of the grid and diodes, the first and second sheets forming an enclosure within which coolant fluid is flowable.

Claim 11 (previously presented). The combination of claim 1 wherein the electrical conductors include primary conductors extending generally in one direction, and secondary conductors extending generally in another direction, the LEDs mounted on the primary conductors, and having terminals extending to the secondary conductors for electrical association

thereto.

Claim 12 (original). The combination of claim 11 wherein the secondary conductors are configured to extend above and/or below the primary conductors.

Claim 13 (original). The combination of claim 12 wherein the secondary conductors are characterized by one of the following:

- i) substantial spacing therebetween to pass coolant fluid through the grid,
- ii) lack of substantial spacing therebetween, to pass coolant fluid parallel to the grid,
- iii) cross sections which are substantially less than the cross sections of primary conductors which support diodes,
- iv) junctions with diode wires.

Claim 14 (original). The combination of claim 1 wherein certain of the conductors include multiple wire strands.

Serial No. 10/625,185

Claim 15 (original). The combination of claim 1 including balls or beads seated on the conductors to act as spacers.

Claim 16 (previously presented). The combination of claim 1 including means for displacing and conducting coolant to one side of the grid, to flow through or adjacent to the grid.

Claim 17 (previously presented). The combination of claim 1 wherein the LEDs product light having light paths, and including a transparent panel extending in said paths of light from the LEDs.

Claim 18 (original). The combination of claim 1 wherein each diode includes a light emitter or emitters, a transparent container having a window area, the emitter supported within the container, and a reflector within the container to reflect emitted light toward said window.

Claim 19 (original). The combination of claim 18 including an electrical lead or leads extending with helical configuration within the container to said emitter or emitters.

Claim 20 (original). The combination of claim 19 wherein the lead or leads has or have a generally rectangular cross section, and support the emitter or emitters.

Claim 21 (currently amended). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting ~~diodes~~ devices in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the ~~diodes~~ devices during diode device operation, and the grid configured for passing coolant fluid for transfer of heat to the fluid,
- d) each diode device including a light emitter or emitters, a transparent container having a window area, the emitter supported within the container, and a reflector within the container to reflect emitted light toward said window,
- e) there being an electrical lead or leads extending with helical configuration within the container to said emitter or emitters,

f) and including a metallic base carrying the container, and through which said lead or leads extend.

Claim 22 (original). The combination of claim 20 wherein said lead or leads include wires associated with a red and/or green and/or blue emitter.

Claim 23 (original). The combination of claim 18 wherein multiple of said diodes have their container windows facing in the same or selected directions.

Claim 24 (currently amended). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid ~~eonfigure~~ configured for passing coolant fluid for transfer of heat to the fluid,

d) each diode including a light emitter or emitters, a transparent container having a window area, the emitter supported within the container, and a reflector within the container to reflect emitted light toward said window,

e) and wherein multiple of said diodes have their container windows facing in the same or selected directions,

f) and wherein the diodes and ~~screen~~ grid define a display.

Claim 25 (previously presented). The combination of claim 21 wherein said base has an edge portion defining a recess for reception of a support for the diode, allowing diode rotation relative to the support.

Claim 26 (currently amended). The combination of claim 25 including wherein electrical conductors defining define a mesh, and multiple of said LED devices carried by the mesh, with said recesses receiving support portions of said conductors allowing rotation of the devices relative to the mesh.

Claim 27 (withdrawn). The combination of claim 3 wherein each light emitting diode comprises, in combination

- i) an electrically energizable light emitter, or emitters;
- ii) a transparent container having a window;
- iii) the emitter or emitters supported within the container;
- iv) and a reflector structure within the container to reflect emitted light toward said window.

Claim 28 (original). The combination of claim 26 including an electrical lead or leads extending with helical configuration within the container to said emitter or emitters.

Claim 29 (withdrawn). The combination of claim 27 wherein the lead or leads has or have a generally rectangular cross section, and support the emitter or emitters.

Claim 30 (original). The combination of claim 26 including a metallic base carrying the container, and through which said lead or leads extend.

Claim 31 (original). The combination of claim 26 wherein said reflector structure includes spaced reflecting walls, and a curved reflector supported between said walls.

Claim 32 (original). The combination of claim 28 wherein said lead or leads include wires associated with a red and/or green and/or blue emitter.

Claim 33 (original). The combination of claim 26 wherein there are multiple of said devices having thin windows facing in a display direction or directions.

Claim 34 (previously presented). The combination of claim 33 including display structure supporting said diodes in a multiple diode display configuration.

Claim 35 (original). The combination of claim 30 wherein said base has an edge portion defining a recess for reception of a support for the diode, allowing diode rotation about the support.

Claim 36 (original). The combination of claim 1 wherein certain of said conductors that provide power for diode operation comprise first, second and third pairs of wires to transmit electrical energization to red, green and blue LED pixels, respectively.

Claim 37 (currently amended). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid ~~configure~~ configured for passing coolant fluid for transfer of heat to the fluid,
- d) and wherein certain of said conductors that provide power for diode operation comprise first, second and third pairs of wires to transmit electrical energization to red, green and blue LED pixels, respectively,
- e) and wherein each LED has primary, secondary and tertiary wires electrically connected to the red, green and blue pixels, respectively, said primary wire being clamp

Serial No. 10/625,185

connected to said first pair of wires, said secondary wire being clamp connected to said second pair of wires, and said tertiary wire being clamp connected to said third pair of wires.

Claim 38 (original). The combination of claim 37 wherein said three pairs of wires are disposed about a central region, and said primary, secondary and tertiary wires are respectively nested between said three pairs of wires, there being a retainer acting to clamp said primary, secondary and tertiary wires in nested position.

Claim 39 (original). The combination of claim 38 wherein said certain conductors extend at an acute angle or angles relative to others of said conductors, said certain conductors defining LED addressing conductors to selectively address LEDs on said others of the conductors.

Claim 40 (original). The combination of claim 39 wherein said acute angle or angles are approximately 45°.

Claim 41 (original). The combination of claim 1 including protective means at one of the following:

- i) at the front of the grid;
- ii) at the rear of the grid;
- iii) at both the front and rear of the grid.

Claim 42 (previously presented). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid configured for passing coolant fluid for transfer of heat to the fluid,
- d) there being protective means at one of the following:
 - i) at the front of the grid;
 - ii) at the rear of the grid;
 - iii) at both the front and rear of the grid,

e) and wherein said protective means includes at least one metallic plate.

Claim 43 (original). The combination of claim 42 wherein said metallic plate is characterized by one of the following:

- x₁ forming air passing openings;
- x₂ forming air passing louvers;
- x₃ forming air passing through slits.

Claim 44 (previously presented). The combination of claim 42 wherein said protective means comprises a metallic screen or screens.

Claim 45 (original). The combination of claim 1 wherein the diodes are removably supported by the grid.

Claim 46 (original). The combination of claim 1 characterized by at least one of the following:

- i) diode emission control electronics within diode packages
- ii) diode emission control electronics at or proximate an edge or edges of the grid.

Claim 47 (previously presented). The combination of claim 1 including diode packages at said diodes, and a light reflecting mirror or mirrors within said diode packages.

Claim 48 (original). The combination of claim 47 characterized by one or more of the following:

- i) a parabolic mirror
- ii) dual mirrors within a package
- iii) a parabolic trough forming mirror or mirrors.

Claim 49 (original). The combination of claim 1 including a conduit for extensions of the conductors, outside the grid.

Claim 50 (currently amended). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid configure configured for passing coolant fluid for

transfer of heat to the fluid,

- d) there being a conduit for extensions of conductors, outside the grid,
- e) and including spring tension exerting means acting on certain of the conductors.

Claim 51 (currently amended). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid ~~configure~~ configured for passing coolant fluid for transfer of heat to the fluid,
- d) there being a conduit for extension of conductors, outside the grid,
- e) and including holders about which end portions of the conductors in the grid are looped, the holders associated with the conduit.

Claim 52 (original). The combination of claim 1 wherein the diodes comprise packages having adjustable operative connection to the conductors characterized by one of the following:

- i) rotatable adjustability about one axis
- ii) rotatable adjustability about two axes.

Claim 53 (original). The combination of claim 52 wherein the diodes in the array have different positions of adjusted angularity.

Claim 54 (previously presented). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) there being LED structure allowing rotary adjustment of at least some LEDs relative to conductors on which those LEDs are supported[.]
- d) and clip means positioning the conductors relative to which the LEDs are rotatably adjustable.

Claim 55 (original). The combination of claim 54 wherein said rotary adjustment is characterized by one of the following:

- i) about an axis or axes defined by the LED or LEDs
- ii) about a conductor axis or axes
- iii) about both i) and ii) above.

Claim 56 (cancelled).

Claim 57 (previously presented). An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid configured for passing coolant fluid for transfer of heat to the fluid,
- d) there being springs exerting tension on at least certain of the conductors, respectively, outside the grid.

Claim 58 (previously presented) An LED array assembly, comprising in combination:

- a) a grid of electrical conductors,
- b) light emitting diodes in association with the grid and in electrical communication with the conductors that provide power for LED operation,
- c) the grid operable to receive heat from the diodes during diode operation, and the grid configured for passing coolant fluid for transfer of heat to the fluid,
- d) said conductors including first conductors which are linearly straight, and second conductors which include undulations extending over and under the first conductors,
- e) the diodes mounted on the first conductors at locations between second conductor undulations that extend over alternate first conductors, there being electrical connectors extending from the diodes to exposed metallic surfaces formed by the undulations.